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USER GUIDE

PS

Produal

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PRODUAL

PART OF BEMSIQ GROUP

PS differential pressure switch

USER GUIDE

Made in Finland

5 years warranty

MANAGEMENT SYSTEM CERTIFICATION DNV ISO 9001 · ISO 14001 Finland

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1 Introduction

The PS differential pressure switches are designed for monitoring overpressure, underpressure or pressure differences in systems that handle air and other non-aggressive gases. These mechanical switches provide a cost-effective solution to monitor pressure for filters, fans, blowers, ventilation ducts and ventilation heat recovery systems.

These differential pressure switches are easy to commission. You can set the switching point manually using the selection wheel.

1.1 About this user guide

This user guide contains important information about the installation, wiring, configuration and use of the product. Read this guide carefully before you install the product, connect the wires, or operate the product. Make sure that you fully understand all instructions before you start work. If you are not sure what the instructions mean, contact the seller or the manufacturer.

Follow all instructions in this user guide carefully. Always obey the applicable local rules and regulations.

The original instructions were written in English. If there are differences between the English instructions and the translations, refer to the English instructions.

If you find a mistake in the English instructions or in the translations, please send the details to the manufacturer.

1.2 Intended use

The PS differential pressure switches are intended to be used for monitoring overpressure, underpressure or pressure differences in systems that handle air or non-aggressive gases.

This device is intended to be connected to a building automation system in the HVAC/R industry.

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2 Safety precautions

The product is developed, manufactured and tested according to high quality standards. However, instructions for safe use must be followed when installing, using or disposing of the product or parts of the product.

Read this user guide carefully before you commission, use or service this device. To avoid any kind of damage to people or property, follow the instructions carefully. Produal is not liable for any hazards, injury to people, or damage to property caused by incorrect installation or misuse of the device.

To avoid electrical shock or damage to equipment, disconnect power before you install or service the product. Use only proper wiring that is rated for the full operating voltage and maximum current in the system. The wiring must also withstand fault conditions.

To avoid fire and/or explosion, do not use the product in potentially flammable or explosive atmosphere.

Make sure that the product is not damaged before installation. Do not drop the product or use excessive force during installation. Do not use the product if you can see any damages.

After installation, the product will be part of a system whose specifications and performance characteristics are not designed or controlled by Produal. Refer to national and local authorities to ensure that the installation is functional and safe.

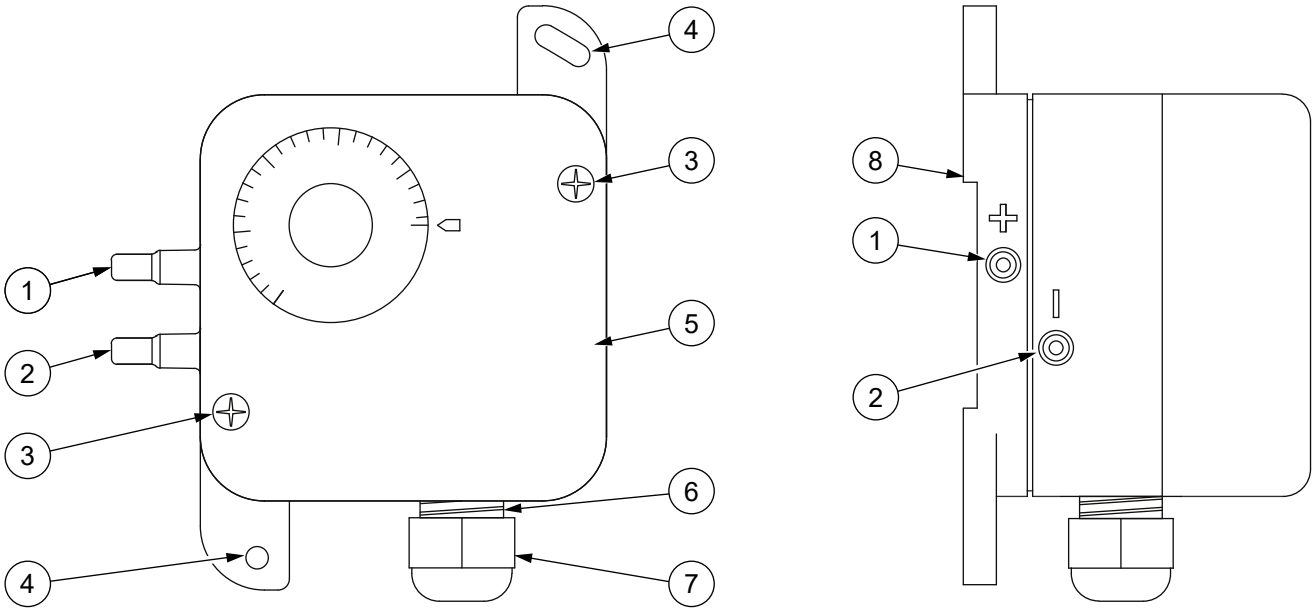
The product should only be used in professionally designed applications. Unauthorised modifications are not allowed. The product must not be used in relation to any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or property.

In this document, there are different warnings and notes. The warning and note types are defined in the following table.

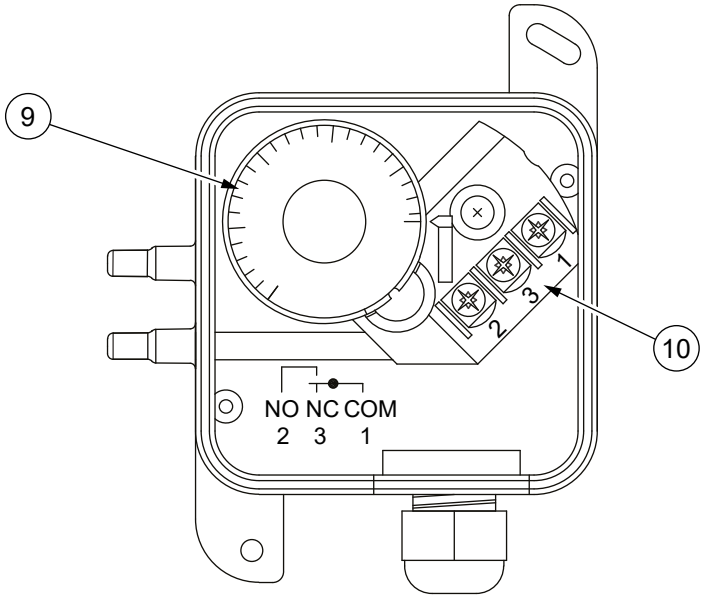
Sign	Description
WARNING:	The warning symbol indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION:	The caution symbol indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
Important:	The important symbol indicates a potentially hazardous situation which, if not avoided, could result in damage to the device or property.
Note:	The note symbol indicates a useful tip or a recommended way to complete a task. These notes also provide information that is useful but not critical to the user.

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3 Main components



1	Pressure connection, high pressure (+)	2	Pressure connection, low pressure (–)
3	Cover locking screw	4	Mounting point
5	Cover	6	Cable gland
7	Strain relief	8	Housing



9	Selection wheel	10	Screw terminal block

4 Commissioning

4.1 Mounting

WARNING: Handle the product with care. Dropping the product can damage it internally and cause unwanted functions in the connected system.

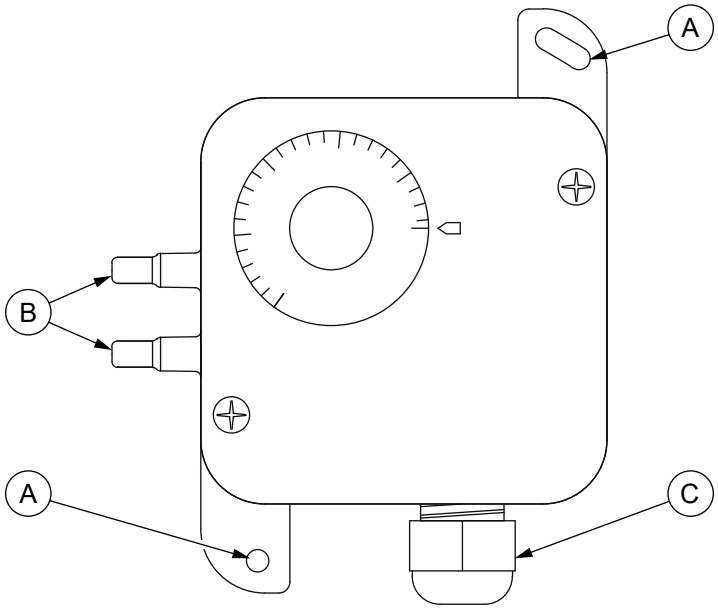
CAUTION: Place the device outside the reach of children and animals.

Important: Only install this device in a location where the ambient conditions meet the operating condition requirements.

Operating conditions

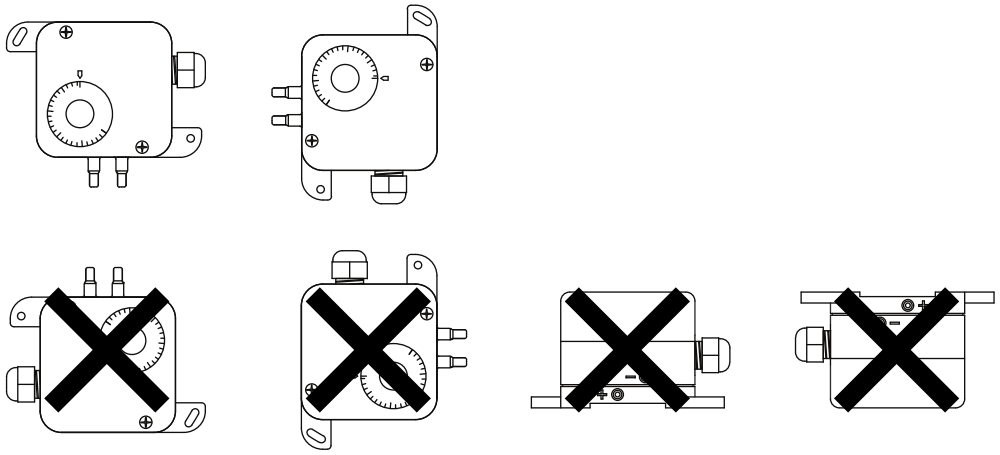
Ambient temperature	-20...60 °C
Ambient humidity	0...95 %rH (non-condensing)

1. Check that the product is not damaged during transportation.
2. Select the mounting position on a duct, wall, or other flat and vertically upright surface.
   Select a location that provides as much protection from water splashes (e.g. rain) as possible. Use a weather shield, if necessary.
3. Use the device as a template and mark the screw holes on the mounting surface.
4. Select the mounting screws according to the mounting surface.
   The maximum screw diameter is 4.0 mm.
5. Make sure that either the cable gland or the pressure connections point down.



A. Mounting point
B. Pressure connections
C. Cable gland

6. Mount the device with the screws using the mounting points.
   See the figure below for the correct mounting orientation.

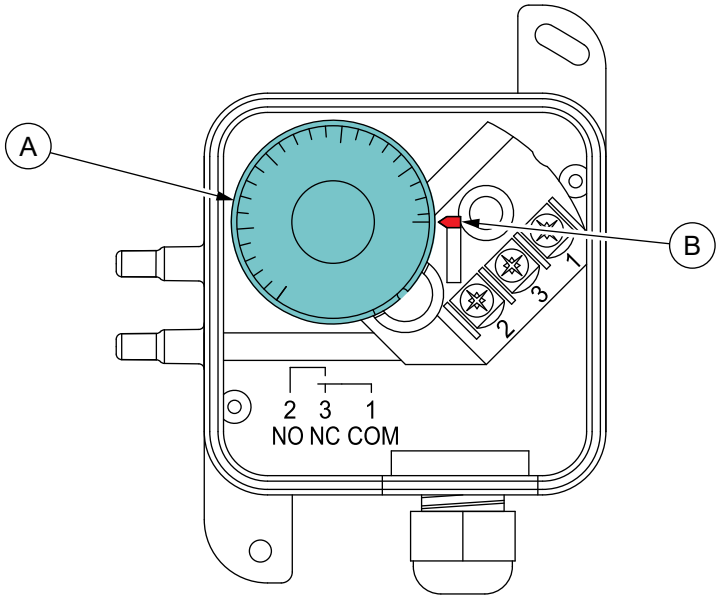


7. Make sure that the device is horizontally and vertically level.
8. Tighten the screws.

4.2 Selecting the switching point

The factory default position of the selection wheel is its minimum value. You can set a higher switching point by turning the selection wheel clockwise.

1. Open the cover locking screws.
2. Open the cover.
3. Turn the selection wheel clockwise to select the correct switching point in Pascals.
   The red arrow adjacent to the selection wheel points at the selected switching point.



A. Selection wheel
B. Selected switching point

4. If the red arrow points a value that is higher than the correct switching point, turn the selection wheel back to its minimum value. Then set the switching point again.

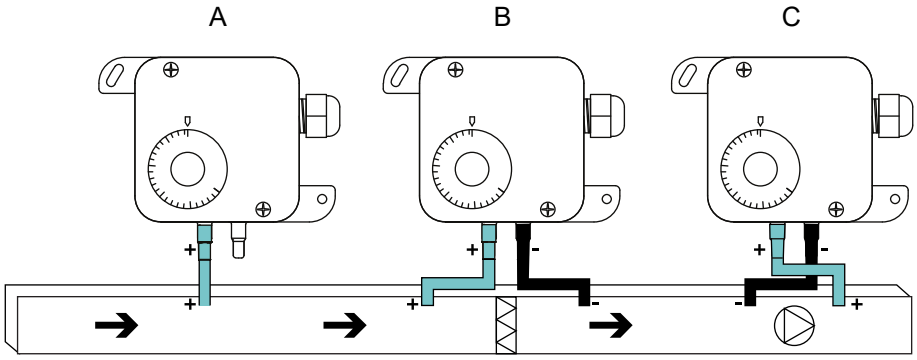
   Do not adjust the switching point by turning the selection wheel counterclockwise.

   Note: Due to the mechanical structure of the device, the accuracy of the switching point depends on the direction in which you turn the selection wheel. The best adjustment accuracy is achieved when you turn the selection wheel clockwise.

5. Close the cover.
6. Install the cover locking screws.

4.3 Connecting the pressure measurement hoses

Connect the pressure measurement hoses to the pressure connections of the device according to your application. See the examples below.

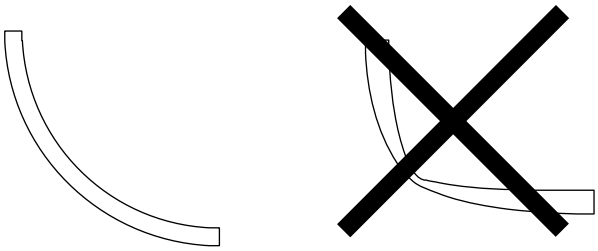


1. Static pressure
2. Filter/damper monitoring
3. Fan/blower monitoring

- If the pressure is static, connect the pressure measurement hose to the "+" connection only.
- Filter or damper monitoring:
  1. Connect a pressure measurement hose to the duct on the high pressure side before the filter/damper and another pressure measurement hose on the low pressure side after the filter/damper.
  2. Connect the high pressure measurement hose to the "+" connection.
  3. Connect the low pressure measurement hose to the "–" connection.
- Fan or blower monitoring:
  1. Connect a pressure measurement hose to the duct on the low pressure side before the fan/blower and another pressure measurement hose on the high pressure side after the fan/blower.
  2. Connect the high pressure measurement hose to the "+" connection.
  3. Connect the low pressure measurement hose to the "–" connection.

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- Install the measurement hoses carefully and make sure that the hoses do not bend too tightly. Too tight curves can prevent the airflow to the sensor.



4.4 Wiring

WARNING: Device wiring and commissioning can only be carried out by qualified professionals. Always make the device wirings in de-energised electricity network.

CAUTION: Connect the device only to overvoltage category II electricity network according to IEC 60664-1.

CAUTION: Make sure that all covers are closed before you connect the supply voltage to the device. Do not open the covers when the supply voltage is connected.

PS200

WARNING: Add an external fuse to the common connector (COM) of the switch output. Use a time-lag fuse (max. 0.1 A) that is in accordance with the standard IEC 60127-2. This device does not have an internal fuse.

WARNING: Check the switch circuit protection and install a fuse if needed. Switch maximum load is 250 Vac, 0.1 A res.

PS300, PS500, PS600, PS1500, PS4500

WARNING: Add an external fuse to the common connector (COM) of the switch output. Use a time-lag fuse (max. 3 A) that is in accordance with the standard IEC 60127-2. This device does not have an internal fuse.

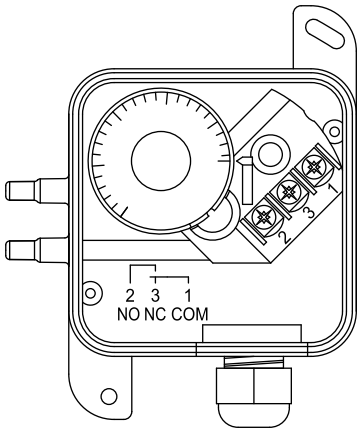
WARNING: Check the switch circuit protection and install a fuse if needed. Switch maximum load is 250 Vac, 3 A res.

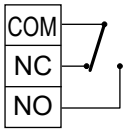
Connect the wires for all models as follows:

1. Open the cover.
2. Unscrew the strain relief on the cable gland.
3. Route the cable through the strain relief and the cable gland.

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4. Connect the wires to the screw terminal block according to the table below.



1	*COM*		Switch output **PS200:** 250 Vac, 0.1 A (res.) / 30 Vdc, 0.1 A (res.) **PS300, PS500, PS600, PS1500, PS4500:** 250 Vac, 3 A (res.), 2 A (ind.) / 30 Vdc, 3 A (res.), 2 A (ind.). Time constant < 7 ms. For DC inductive loads.
3	*NC*		
2	*NO*		

The nominal tightening torque for wiring terminal screws is 1.5 Nm.

Important: Do not use excessive force when you tighten the wiring terminal screws.

5. Tighten the strain relief.
6. Close the cover.
7. Install the cover locking screws.
   Make sure that the cover does not open without tools.

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5 Disposal

This device is considered as electrical and electronic equipment for disposal in terms of the applicable European Directive. At the end of life, the product must enter the recycling system at an appropriate collection point.

- The device must be disposed through channels provided for this purpose.
- The disposal must be completed according to the local and currently applicable laws and regulations.

Generally all metals can be recycled as material. Plastics and cardboard packaging material can be used in energy recovery. Printed circuit boards need selective treatment according to IEC 62635 guidelines. To aid recycling, plastic parts are marked with an appropriate identification code. Contact your local Produal distributor for further information on environmental aspects and recycling instructions for professional recyclers.



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